CLAIMS

I claim:

1. An automated traffic control method comprising the steps of:

processing real-time data received from transducers, sensors and other data sources that monitor a physical process in a traffic complex; and

generating signals, via a processor, to elements in the traffic complex that can have an impact upon the physical process.

2. An automated traffic control method comprising the steps of:

using radar sensors to detect a feature of a traffic complex, wherein the radar sensors are built into an integrated circuit chip.

3. An automated traffic control method comprising the steps of:

a) automatically intervening in control of a vehicle by taking at least temporary and at least partial control of at least one of throttling, braking, and steering, with the step of automatically intervening including the steps of assisting in appropriate maneuvers and disallowing dangerous moves including vehicle shutdown; and

b) using in combination each of radar and sensor based systems, global positioning systems, navigation and communications technologies, automatic vision enhancement, an on-line speed limit display, a speed limit control, computer telephony, a safety readiness system, and a warning system.

4. An automated traffic control method comprising the steps of:

feeding information from infrastructure and vehicle sensors into computer-based decision support algorithms to determine whether at least partial control of a vehicle in a traffic complex will be temporarily activated;

using navigational and communications technologies to locate an exact position of a threatening vehicle; and

activating a vehicle-control intervention system on at least one vehicle to avoid or lessen the severity of a collision.

5. The method of claim 4 and further comprising the step of determining whether pre-collision safety restraint systems will be deployed in the involved vehicles.

6. The method of claim 5 and further comprising the step of using electronic tags attached to features of the traffic complex to provide target mass information to allow reliable pre-collision restraint deployment decisions.

7. The method of claim 4 wherein vehicle-control intervention systems on the involved vehicles include anti-skid systems.

8. An automated traffic control method comprising the steps of:

providing an electronic path to guide vehicles in a traffic complex to keep said vehicles in their respective lanes;

assisting vehicles in appropriate maneuvers and disallowing dangerous moves by:

using GPS;

using GPS steering and permitting a driver of a vehicle to override GPS steering;

automatically selecting whether to shutdown a vehicle;

automatically selecting whether to decelerate a vehicle;

automatically selecting whether to brake a vehicle; and

using an automated vision enhancement system.

9. An automated traffic control method comprising the steps of:

employing an automatic vision enhancement system in combination with electronic tags attached to features of a traffic complex to perceive the features when glare from sunlight or on-coming headlights adversely affect vision of a driver of a vehicle.

10. An automated traffic control method comprising the steps of:

using each of the following elements in combination to control traffic:

microwave radar;

millimeter-wave radar;

laser radar;

at least one of ultrasound imaging and sonography;

video image processing;

at least one of infrared imaging and thermal imaging;

infrared illumination;

ultraviolet illumination;

pulse doppler modes;

frequency-modulated continuous-wave modes;

binary phase modulation transmission modes;

frequency modulation transmission modes; and

a charged-coupled-device camera employed for visual enhancement when an external light source is used to extend the visibility band of the charged-coupled-device camera.

11. An automated traffic control method comprising the steps of:

using a GPS-based computer representation of features in a traffic complex to perceive the objects whereby visibility of pavement edges, pavement markings and pedestrians is enhanced.

12. An automated traffic control method comprising the steps of:

employing sensors in a traffic complex;

feeding voice, video and data transmissions from the sensors into computer-based algorithms to analyze the transmissions; and

at least one of advising and initiating appropriate predetermined response plans.

13. An automated traffic control method comprising the steps of:

employing a transmitter in a vehicle;

configuring the transmitter to broadcast a limited range warning signal at a selected frequency, wherein the selected frequency is at least one of a dedicated emergency frequency and shared frequency; and

changing a range of the limited range warning signal on the basis of at least one of a traffic condition, weather condition, and speed of a vehicle transmitting the limited range warning signal.

14. An automated traffic control method comprising the steps of:

automatically imaging and scanning a scene in a traffic complex; then

automatically sensing a situation in the scene; then

automatically zooming in on the situation; and then

automatically sending a warning signal.

15. An automated traffic control method comprising the steps of:

employing global positioning satellite technology to provide coordinates of an immediate scene in a traffic complex; and

employing global positioning satellite technology to provide precise mathematical correlation of a second scene surrounding the immediate scene;

whereby vision of both immediate and surrounding scenes are automatically enhanced.

16. An automated traffic control method comprising the steps of:

using regular charge-coupled device cameras for vision enhancement of a scene in a traffic complex and using external light sources to extend visibility bands of the regular charge-coupled device cameras.

17. An automated traffic control method comprising the steps of:

employing a first search radar having a first field of view of a first portion of a traffic complex;

employing a second search radar having a second field of view of the first portion of the traffic complex;

automatically receiving and integrating information from the first and second fields of view; and then

providing dynamic visual and audible displays of the first portion of the traffic complex based upon the step of integrating the information from the first and second fields of view.

18. An automated traffic control method comprising the steps of:

providing an alert indication of a situation in a traffic complex in the form of each of a sound, warning light, image, instruction, message, and display.

19. An automated traffic control method comprising the steps of:

providing a warning originating from a transmitter on an individual in a traffic complex;

providing a warning originating from an infrastructure-based component of the traffic complex;

providing a warning originating from a device in a vehicle in the traffic complex, wherein said device in said vehicle overrides and renders inaudible any sound system in said vehicle; and

wherein said warning includes at least one of the steps of displaying said warning, sounding said warning, illuminating said warning, and advising of said warning by interactive voice response.

20. An automated traffic control method comprising the steps of:

employing each of a satellite navigation technology, a terrestrial navigation technology, and a dead reckoning navigation technology to provide exact coordinates and automated vision enhancement in a traffic complex.

21. An automated traffic control method comprising the steps of:

linking communication to provide information to vehicles in a traffic complex, wherein said step of linking communication comprises the step of linking together a geo-synchronous orbit satellite communication system, a low earth orbit satellite communication system, a terrestrial communication system, and a citizen band (CB) communication system.

22. An automated traffic control method comprising the steps of:

imaging and sensing an outside scene in a traffic complex;

dynamically overlaying the outside scene on at least one of a front windshield of a vehicle, an in-vehicle display, a portion of a pair of glasses worn by a person in the traffic complex; and

providing information through interactive voice response communication..

23. An automated traffic control method comprising the steps of:

feeding voice, video and data transmissions from traffic complex obstructions and hazards sensors into algorithms;

sensing disruptions in a flow of the voice, video and data transmissions; and

employing radar and sensor based systems and GPS systems to control a vehicle in the traffic complex relative to the obstructions and hazards in response to the disruptions that are sensed.

24. An automated traffic control method comprising the steps of:

producing a dynamic image of a portion of a traffic complex; and

overlaying the dynamic image on a portion of at least one of a pair of glasses, a pair of goggles, a shield, and a screen.

25. An automated traffic control method comprising the steps of:

placing active and passive electronic tags and infrastructure-based components with respective traffic complex obstructions and hazards and transmitting at least one of a warning and instruction from the electronic tags to automatically enhance vision of the traffic complex obstructions and hazards.

26. An automated traffic control method comprising the steps of:

employing algorithms to initiate and advise of appropriate, predetermined actions in response to sensed obstructions and hazards in the traffic complex.

27. An automated traffic control method comprising the steps of:

employing radar and sensor-based systems in combination with an interactive voice response communication system to convert sensed and imaged scenes of a traffic complex, including invisible images, into dynamic, visible and audible displays whereby information and "sight" are provided.

28. An automated traffic control method comprising the steps of:

receiving a designated signal with a device engaged with one of a person, vehicle and object in a traffic complex;

emitting a radio signal from the device upon receiving the designated signal; and

sending with the radio signal identifying information and location information on the person, vehicle or object with which the object is engaged.

29. An automated traffic control method comprising the steps of:

transmitting electromagnetic energy into a portion of a traffic complex;

detecting the electromagnetic energy being reflected by objects such that invisible images are converted into visible images; and

placing the visible images onto at least a portion of glasses to be worn by a person.

30. An automated traffic control method comprising the steps of:

receiving a signal from at least one of a vehicle and train in a traffic complex and determining that said at least one vehicle and train is advancing in the traffic complex and not threatening a feature of the traffic complex; and

receiving a signal from said at least one vehicle and train and determining that said at least one vehicle and train is threatening a feature in a traffic complex.

31. An automated traffic control method comprising the steps of:

producing an over-laid dynamic map of an immediate area of a traffic complex using global positioning satellites and at least one other land and mapping information system.

32. An automated traffic control method comprising the steps of:

producing an image of a feature of a traffic complex; and then

converting the image that has been produced to an audible display employing interactive voice response.

33. An automated traffic control method comprising the steps of:

having energy absorbed into a feature of a traffic complex;

having energy emitted from a feature of the traffic complex;

having energy reflected from a feature of the traffic complex; and

assimilating the absorbed, emitted and reflected energy to warn of danger and to instruct.

34. An automated traffic control method comprising the steps of:

employing global positioning satellites for updated coordinates of a traffic complex and utilizing land information systems for further information on the traffic complex;

providing dynamic, visually enhanced pictures of surroundings based upon the steps of employing global positioning satellites and utilizing land information systems; and

maneuvering vehicles to positions where harm is less likely based upon the step of providing dynamic, visually enhanced pictures of surroundings.

35. An automated traffic control method comprising the steps of:

using computer algorithms that employ artificial intelligence capabilities to recommend response plans based on input characteristics, wherein the response plans are created in response to situations in a traffic complex;

selecting the artificial intelligence capabilities from capabilities that virtually learn over a period of time which action works best; and

optionally, using computer simulation modeling to predict potential traffic incidents and further using computer simulation modeling to predict incident response impacts ahead of time.

36. An automated traffic control method comprising the steps of:

employing a processor to interact with and manage each of a collision avoidance system, global positioning system, computer telephony system, and safety readiness system; and

employing the processor to trigger vehicle-control intervention as safety dictates.